

LSC Use Only No: <u>07-16g.</u>	LSC Action-Date:	UWUCC USE Only No.	UWUCC Action-Date:
		Senate Action Date: <u>App-12/4/07</u>	<u>App-10-30-07</u>

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person: David T. Smith	Email Address: dtsmith@iup.edu
Proposing Department/Unit: Computer Science	Phone: 7-4478

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

1. Course Proposals (check all that apply)

New Course Course Prefix Change Course Deletion
 Course Revision Course Number and/or Title Change Catalog Description Change

<u>Current</u> Course prefix, number and full title	<u>Proposed</u> course prefix, number and full title, if changing
---	---

2. Additional Course Designations: check if appropriate

This course is also proposed as a Liberal Studies Course. Other: (e.g., Women's Studies, Pan-African)
 This course is also proposed as an Honors College Course.

3. Program Proposals

Catalog Description Change Program Revision
 New Degree Program Program Title Change Other
 New Minor Program New Track

Bachelor of Science- Computer Science/ Applied Computer Science Track	
<u>Current</u> program name	<u>Proposed</u> program name, if changing

4. Approvals		Date
Dept Curriculum Committee Chair	<i>[Signature]</i>	5 Dec 06
Department Chair	<i>[Signature]</i>	12/7/06
Coll. Curriculum Committee Chair	<i>[Signature]</i>	05/17/07
College Dean	<i>[Signature]</i>	9/24/07
Director of Liberal Studies *	<i>[Signature]</i>	9/27/07
Director of Honors College *		
Provost *	<i>[Signature]</i>	10/25/07
Additional signatures as appropriate: (include title)		
UWUCC Co-Chairs	<i>[Signature]</i>	10/30/07

* where applicable



Received
 SEP 25 2007
 Liberal Studies

Part II. Description of Curriculum Change

1. Catalog Description for the Revised Bachelor of Science- Computer Science/Applied Computer Science Track

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **48**

Mathematics: 3cr, MATH 125(1)

Liberal Studies Electives: 3cr, MATH 216, no courses with COSC prefix.

Major: **40**

Required Courses:

COSC 105 Fundamentals of Computer Science	3cr
COSC 110 Problem Solving and Structured Programming	3cr
COSC 210 Object-Oriented and GUI Programming	3cr
COSC 220 Applied Computer Programming	4cr
COSC 300 Computer Organization and Assembly Language	3cr
COSC 310 Data Structures and Algorithms	3cr
COSC 319 Software Engineering Concepts	3cr
COSC 341 Intro to Database Management Systems	3cr
COSC 365 Web Architecture and Application Development	3cr
COSC 380 Seminar in Computing Profession and Ethics	2cr
COSC 480 Seminar on Technical Topics	1cr
Select one of the following two courses:	
COSC 320 Software Engineering Practice	3cr (2)
COSC 493 Internship in Computer Science	12cr (3)

Controlled Electives:

Select 3cr from the following: (4)

COSC/MATH 250 Introduction to Numerical Methods	3cr
COSC 316 Host Computer Security	3cr (5)
COSC 345 Computer Networks	3cr
COSC/IFMG 354 Testing and Controlling LANs	3cr
COSC 355 Computer Graphics	3cr
COSC 356 Network Security	3cr
COSC 362 Unix Systems	3cr
COSC 481 Special Topics in Computer Science (only sections approved for majors)	1-4cr
COSC 482 Independent Study	1-4cr
IFMG 455 Data Warehousing & Mining	3cr

Upper-level Electives by Categories: 3cr from the following: 3cr (6)

Artificial Intelligence: COSC 405

Computer Architecture: COSC 410

Database Management: COSC 444

Numerical Methods: COSC 427, 451

Systems Programming: COSC 430, 432

Theory of Languages: COSC 420, 424, 460

Other Requirements:

6-12

Additional Writing:

ENGL 322 Technical Writing	3cr
Foreign Language Intermediate Level	0-6cr

Additional Mathematics: 3cr (1)
MATH 219 Discrete Mathematics

Minor: Complete a minor from one of the following areas: **8-18**
Information Assurance 18cr
Any department in the College of NSM 8-18cr
Designated Business courses 18cr
Designated Economics courses 15cr
Designated Geography courses 15cr
Designated Communications Media courses 18cr

Free Electives: **2-18**

Total Degree Requirements: **120**

- (1) MATH 125 can be substituted by MATH 121.
- (2) Credit for both COSC 320 and 493 may be counted toward the degree, but only one will be counted toward the major requirements.
- (3) COSC 493 may be selected in either the second semester of the junior year or the first semester of the senior year. If COSC 493 is selected and approved, COSC 380 may be taken in the immediately preceding semester. Note: Only 4cr of COSC 493 can be counted towards major.
- (4) Select at least 3sh from the list of controlled electives and/or the list of upper-level electives.
- (5) COSC 316 cannot be counted for major credit if a student does an Information Assurance minor.
- (6) Select at least one additional course from list of upper-level electives.

2. Summary of Changes

a) Side-by-side comparison of Current and Proposed programs (the changes are shown in italics).

Current Program

Bachelor of Science - Computer Science/Applied Computer Science Track

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **50**

Mathematics: MATH 123 (1)

Liberal Studies Electives: MATH 216 (4cr) (1)

Major: **39**

Required Courses:

COSC 105 Fundamentals of Computer Science 3cr

COSC 110 Problem Solving and Structured Programming 3cr

COSC 210 Object-Oriented and GUI Programming 3cr

COSC 220 Applied Computer Programming 4cr

COSC 300 Assembly Language Programming 3cr

COSC 310 Data Structures and Algorithms 3cr

COSC 319 Software Engineering Concepts 3cr

COSC 341 Intro to Database Management Systems 3cr

COSC 380 Seminar on the Computer Profession 1cr

COSC 480 Seminar on Technical Topics 1cr

~~One of the following two courses: (2)~~

~~COSC 304 Interactive Internet Programming with Java 3cr~~

~~COSC 344 Productivity Tools and 4th-Generation Languages 3cr~~

Select one of the following two courses:

COSC 320 Software Engineering Practice 3cr (3)

COSC 493 Internship in Computer Science 12cr (4)

Controlled Electives: 3cr from the following: (5)

COSC 250 Introduction to Numerical Methods 3cr

COSC 316 Host Computer Security 3cr (6)

COSC 345 Data Communications 3cr

COSC/IFMG 354 Testing and Controlling LANs 3cr

COSC 355 Computer Graphics 3cr

COSC 356 Network Security 3cr

~~COSC 360 IBM Job Control Language 1cr~~

COSC 362 Unix Systems 3cr

COSC 481 Special Topics in Computer Science (only sections approved for majors) 1-4cr

COSC 482 Independent Study 1-4cr

IFMG 455 Data Warehousing & Mining 3cr

Upper-level Electives by Categories: 3cr from the following: 3cr (7)

Artificial Intelligence: COSC 405

Computer Architecture: COSC 410

Database Management: ~~COSC 415~~

Numerical Methods: COSC 427, 450, 451

Systems Programming: COSC 430, 432

Theory of Languages: COSC 419, 420, 424, 460

Other Requirements: 6-12

Additional Writing:

ENGL 322 Technical Writing 3cr

Foreign Language Intermediate Level 0-6cr

Additional Mathematics:

MATH 219 Discrete Mathematics 3cr (1)

Proposed Program

Bachelor of Science - Computer Science/Applied Computer Science Track

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **48**

Mathematics: *3cr*, MATH 125 (1)

Liberal Studies Electives: *3cr*, MATH 216, no courses with COSC prefix.

Major: **40**

Required Courses:

COSC 105 Fundamentals of Computer Science 3cr

COSC 110 Problem Solving and Structured Programming 3cr

COSC 210 Object-Oriented and GUI Programming 3cr

COSC 220 Applied Computer Programming 4cr

COSC 300 Computer Organization and Assembly Language 3cr

COSC 310 Data Structures and Algorithms 3cr

COSC 319 Software Engineering Concepts 3cr

COSC 341 Intro to Database Management Systems 3cr

COSC 365 Web Architecture and Application Development 3cr

COSC 380 Seminar in Computing Profession and Ethics 2cr

COSC 480 Seminar on Technical Topics 1cr

Select one of the following two courses:

COSC 320 Software Engineering Practice 3cr (2)

COSC 493 Internship in Computer Science 12cr (3)

Controlled Electives: 3cr from the following: (4)

COSC/MATH 250 Introduction to Numerical Methods 3cr

COSC 316 Host Computer Security 3cr (5)

COSC 345 Computer Networks 3cr

COSC/IFMG 354 Testing and Controlling LANs 3cr

COSC 355 Computer Graphics 3cr

COSC 356 Network Security 3cr

COSC 362 Unix Systems 3cr

COSC 481 Special Topics in Computer Science (only sections approved for majors) 1-4cr

COSC 482 Independent Study 1-4cr

IFMG 455 Data Warehousing & Mining 3cr

Upper-level Electives by Categories: 3cr from the following: 3cr (6)

Artificial Intelligence: COSC 405

Computer Architecture: COSC 410

Database Management: *COSC 444*

Numerical Methods: COSC 427, 451

Systems Programming: COSC 430, 432

Theory of Languages: 420, 424, 460

Other Requirements: 6-12

Additional Writing:

ENGL 322 Technical Writing 3cr

Foreign Language Intermediate Level 0-6cr

Additional Mathematics:

MATH 219 Discrete Mathematics 3cr (1)

Current Program

Complete a minor from one of the following areas:	7-18
Information Assurance	18cr
Any department in the College of Natural Sciences and Mathematics	7-18cr
Designated Business courses	18cr
Designated Economics courses	15cr
Designated Geography courses	15cr
Designated Communications Media courses	18cr

Free Electives: 1-18

Total Degree Requirements: 120

- (1) MATH 123 can be substituted by taking both MATH 121 and 122. MATH 216 can be substituted by taking both MATH 214 and 417 or both MATH 217 and 417.
- (2) Credit for both COSC 304 and 344 may be counted toward the degree, but only one will be counted toward the major requirements.
- (3) Credit for both COSC 320 and 493 may be counted toward the degree, but only one will be counted toward the major requirements.
- (4) COSC 493 may be selected in either the second semester of the junior year or the first semester of the senior year. If COSC 493 is selected and approved, COSC 380 may be taken in the immediately preceding semester.
- (5) Select at least 3sh from the list of controlled electives and/or the list of upper-level electives.
- (6) COSC 316 cannot be counted for major credit if a student does an Information Assurance minor.
- (7) Select at least one additional course from list of upper-level electives.

Proposed Program

Complete a minor from one of the following areas:	8-18
Information Assurance	18cr
Any department in the College of Natural Sciences and Mathematics	8-18cr
Designated Business courses	18cr
Designated Economics courses	15cr
Designated Geography courses	15cr
Designated Communications Media courses	18cr

Free Electives: 2-18

Total Degree Requirements: 120

- (1) MATH 125 can be substituted by MATH 121.
- (2) Credit for both COSC 320 and 493 may be counted toward the degree, but only one will be counted toward the major requirements.
- (3) COSC 493 may be selected in either the second semester of the junior year or the first semester of the senior year. If COSC 493 is selected and approved, COSC 380 may be taken in the immediately preceding semester. *Note: Only 4cr of COSC 493 can be counted towards major.*
- (4) Select at least 3cr from the list of controlled electives and/or the list of upper-level electives.
- (5) COSC 316 cannot be counted for major credit if a student does an Information Assurance minor.
- (6) Select at least one additional course from list of upper-level electives.

b) List of associated course changes

The following courses have changed course numbers:

COSC 415 Internet Architecture and Programming, revised, re-numbered and re-titled
as **COSC 365 Web Architecture and Application Development**
COSC 344 Productivity Tools and Fourth Generation Language re-numbered as **COSC 444**

The following courses have been deleted:

COSC 304 Interactive Internet Programming with Java
COSC 360 IBM Job Control Language
COSC 419 Software Development with Ada
COSC 450 Applied Numerical Methods

3. Rationale

The software industry has rapidly shifted from fourth generation languages to Internet and Web based programming. Internet and Web based programming are key competencies that our students must acquire in order to become software development professionals. Furthermore, many internship positions involve Internet and Web programming tasks. For some positions, these skills are a requirement.

a) The Computer Science curriculum is being updated to reflect these demands in industry. COSC 415 is the primary course covering the content of Internet and Web based programming. Currently, it is listed as Upper Level Elective that a student completes during the senior year. However, if taken in the last semester the course is too late to be of benefit to a student desiring to complete a Web programming internship. It is being re-numbered to COSC 365 to reflect that the course is to be taken during the student's junior year. Furthermore, it is being changed from an Upper Level Elective to a required course for the applied track. It is being re-titled to better reflect the course content.

b) With the change in industry focus from fourth generation languages, COSC 344 is being changed from being a required course on the applied track to become an Upper Level Elective. The subject of COSC 344 is still considered to be important, but is no longer a requirement. COSC 344 is being re-numbered to COSC 444 to reflect an Upper Level Elective.

c) COSC 304 was last offered in Fall of 2003. Up to 2002, the Computer Science curriculum was centered on the traditional programming languages of C++ and COBOL. Java was a new programming language that was gaining national industry acceptance. By 2002, it was clear that Java was going to be an important language for industry. The Computer Science Department introduced COSC 210 as a new Java course in the programming path COSC 110 - 210 - 310. The coverage of 210 superseded COSC 304 so that after a year of transition, COSC 304 was not taught again. COSC 304 is being deleted from the curriculum and all programs that reference it.

d) COSC 360, 419 and 450 are courses that have not been taught in over 5 years. Content covered in these courses are no longer required by industry. Both are being deleted from the curriculum and all programs that reference them.

e) MATH 123 is replaced by a new course, MATH 125 by the Department of Mathematics. The credit hours of MATH 125 are 3 only. These changes were approved by the Senate.

f) The credit hours of MATH 216 are reduced from 4 to 3 by the Department of Mathematics and were approved by the Senate.

h) Liberal studies credit hours are reduced from 50 to 48 because of reduced credit hours of MATH 125 and 216.

i) MATH 217/417 or MATH 214/417 option is removed because computer science majors require only one course on probability and statistics; and MATH 216 Probability and Statistics for Natural Sciences, even after being reduced to three credits, still provides the statistics and approach we need. The content of MATH 216 is now closer to that of MATH 214 and 217; so we will leave it to the department chair's discretion as to accepting MATH 214 or MATH 217 in lieu of MATH 216, rather than require an additional course MATH 417 to insure comparable coverage.

Part III. Implementation

1. Proposed Date of Change.

It is proposed that the changes be implemented for the academic year after the Senate approval.

2. Effects on Currently Enrolled Students.

Sophomores, Juniors, and returning Seniors enrolled during the academic year may complete either COSC 365 or COSC 444 to fulfill the current required course of COSC 344 of the applied track.

Freshmen in the Applied Track who matriculate during the academic year and after must complete COSC 365.

3. Effects on Faculty/Resources.

There are no overall effects to the Computer Science faculty. Resources are adequate. It is expected that COSC 365 will be offered more frequently where as COSC 444 will be offered less frequently.

4. Effects on the Number of Students.

It is expected that there will be no effects on the number of students in the program. These changes are needed to maintain the department's reputation on preparing students to become software development professionals.

Part IV. Periodic Assessment

The assessment of the success of the proposed changes described in this proposal will be performed as part of the Computer Science Department's overall curriculum assessment policies. This change is minor and will not affect the way current assessment is done.

Part V. Course Proposals

There are no new courses.

Part VI. Letters of Support or Acknowledgement

Letters of Support or Acknowledgement for the deletion of COSC 304 and the change in number for COSC 344 are provided in individual proposals for each.